MULTIMEDIA UNIVERSITY

STUDENT ID NO

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MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 1, 2019 / 2020 SESSION

DPD 5211 – PROGRAM DESIGN

(DIT Only)

16 OCTOBER 2019
2.30 p.m – 4.30 p.m
(2 Hours)

INSTRUCTIONS TO STUDENT

1. This question paper consists of 8 pages.
2. There are **FOUR (4)** questions. Each question carries 10 marks.
3. Answer ALL questions.
4. Please write your answers in the **Answer Booklet** provided.

STRUCTURED QUESTIONS.

Instruction: Write your answers in the Answer Booklet provided.

QUESTION 1 [10 MARKS]

Teachers of Year 3 from a school in Cyberjaya wanted to do a class arrangement for year 2020. The arrangement is based on the average marks of four subjects (Bahasa Malaysia, English, Mathematics and Science) in end-year examination of 2019 obtained by each student. The requirement is as follows:

Average	Class
70 to 100	Awesome
40 to 69	Brilliant
0 to 39	Champion

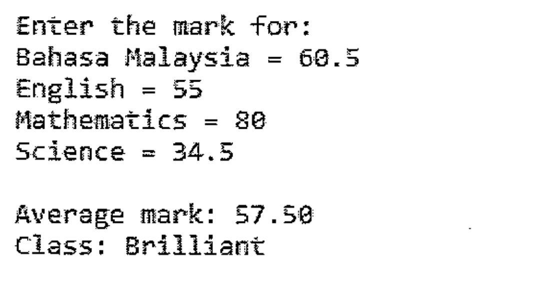
Table 1: Class arrangement based on the average marks

a) **Prepare a flowchart** based on the scenario above and the descriptions below: (5 Marks)

- Initialize all the necessary variables.
- Get the mark (data type: *float*) for each subject from the user. (You don't have to apply looping for this task).
- Calculate the total and average mark of the four subjects.
- Determine the new class for the student based on the requirement shown in Table 1.
- Display the average mark and class name.

b) **Write a program** based on the question and your answer in (a). You may refer to the sample output. (5 Marks)

SAMPLE OUTPUT



```
Enter the mark for:
Bahasa Malaysia = 60.5
English = 55
Mathematics = 80
Science = 34.5

Average mark: 57.50
Class: Brilliant
```

[TOTAL 10 MARKS]

Continued...

QUESTION 2 [10 MARKS]

Table 2 shows the amount of funds collected by the student's representatives for the four areas that were affected by flash flood.

Area Student Representative	Jasin	Merlimau	Cheng	Krubong
Kristen	$200	$140.50	$137	$270
Dave	$240	$135	$123.80	$90
Sheldon	$243.60	$204	$300	$132

Table 2: Total amount of funds

Write a program based on the following descriptions:

- Declare a prototype function for the respective functions.
- Create *two global string arrays* named *studentname* (size of 3) and *area* (size of 4). Then assign the student's name and the area name accordingly. Refer to Table 2.

- In *main():*
  - Create a *two-dimensional array* named *fund* with the appropriate size and assign the values based on the data presented in Table 2.
  - Call function *getTotalFund(...)* and pass the array as the argument.
  - Call function *getHighestFund(...)* and pass the array as the argument.

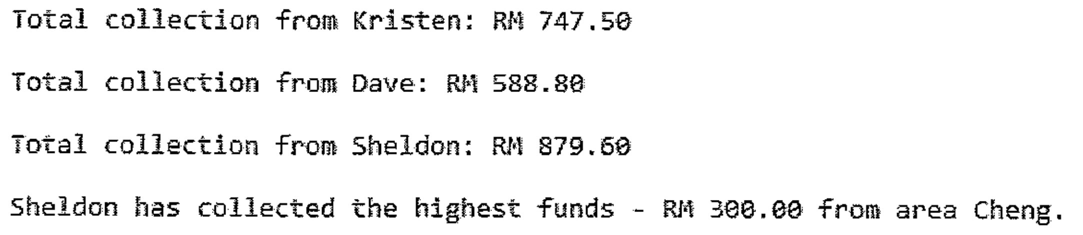
- In *getTotalFund(...):*
  - Use `for` loops to calculate the total amount of funds for each student and display it respectively.
  - *Note: This function does not return any value to the main function.*

- In *getHighestFund(...):*
  - Use `for` loops to find who collected the highest funds and from which area.
  - Display the details.
  - *Note: This function does not return any value to the main function.*

Continued...

You may refer to the following output:

SAMPLE OUTPUT



```
Total collection from Kristen: RM 747.50

Total collection from Dave: RM 588.80

Total collection from Sheldon: RM 879.60

Sheldon has collected the highest funds - RM 300.00 from area Cheng.
```

[TOTAL 10 MARKS]

QUESTION 3 [10 MARKS]

Table 3 shows the fare price of a ferry ticket based on the route of departure and destination point.

Route Code	Departure/Destination Name	Fare price (RM)
M	Jetty Merang to Redang Island	55.00
R	Redang Island to Jetty Merang	50.00
K	Jetty Kuala Besut to Perhentian Island	40.00
P	Perhentian Island to Jetty Kuala Besut	35.00

Table 3: Route of ferry and fare amount.

Write a program based on the following descriptions.

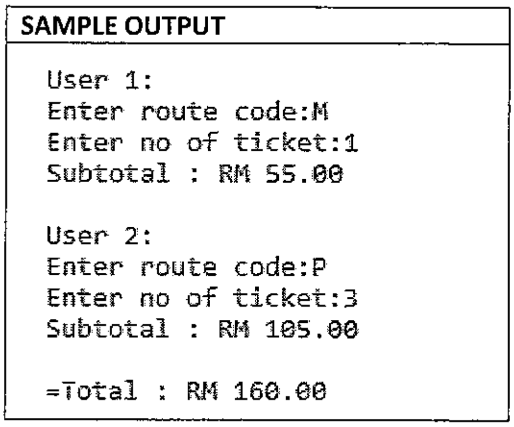
- Create a structure called *FerryTicket.* Declare the following variables:
    - Route code: *route_code (char)*
    - Number of tickets: *no_pax (int)*
    - Ticket price: *fare (float)*
    - Subtotal of the tickets price: *subtotal (float)*
- Create an array of structure variable called *myTicket* with size of 2, which represents for two users.
- Declare other necessary variables.

Continued...

- Using *for* loop:
    - Get user's input for the route code and number of ticket.
    - Use *switch-case* statement to determine the *fare* based on the route code. Refer to Table 3.
    - Calculate the *subtotal* amount of ticket purchased for each user.
    - Calculate the total amount of the purchased tickets.
    - Display the subtotal amount.

- Display the total amount.

You may refer to the sample output.



SAMPLE OUTPUT

```
User 1:
Enter route code:M
Enter no of ticket:1
Subtotal : RM 55.00

User 2:
Enter route code:P
Enter no of ticket:3
Subtotal : RM 105.00

=Total : RM 160.00
```

[TOTAL 10 MARKS]

Continued...

QUESTION 4 [10 MARKS]

Program Q4 demonstrates a program that stores customer name, type of laundry service, laundry weight into a text file and calculates the total amount of the service. **Complete the program** based on the instructions below. You don't have to re-write the code that have been provided in *Program Q4.*

The instructions are as follows:

- Declare a prototype function for the respective function.
- Create files variables named *fWrite* and *fRead.*
- Declare all variables as global.

- In *main ():*
  - **A.** Open a text file called *customer.txt* for writing.
  - o Using a for loop statement to repeat the following process for 2 times (2 customers)
    - ▪ Ask the user to enter customer name, type of service and laundry weight
    - **B.** Write all the data to the text file (refer to Figure 1).
  - **C.** Close the file.
  - o Call function *getTotalAmount().*

- In *getTotalAmount ():*
  - **D.** Open a text file called *customer.txt* for reading.
  - **E.** Using a ***while*** loop, read all the data from the file (till the end of the file) and store them in appropriate variables.
    - **F.** Use ***switch*** statement to set the service name (*as string*) and the cost per kg based on the service type. Refer to Table 4.

Type of Service	Service	Cost per kg (RM)
1	Wash and folding	8.00
2	Folding	5.00

Table 4: Details of the laundry service

Continued...

G. Then, use ***nested if-else*** to calculate the total amount of the service. The formula is:

Total = (cost per kg x laundry weight) + additional charge.

Additional charge will be added based on the range of the weight as shown in Table 5.

Laundry weight	Additional charge (RM)
Less or equal to 5	3.00
More than 5 and less than 10	2.00
More than or equal to 10	No additional charge

Table 5: Additional charge

- Display all the data on the command prompt (refer to the sample output).

H. Close the files.

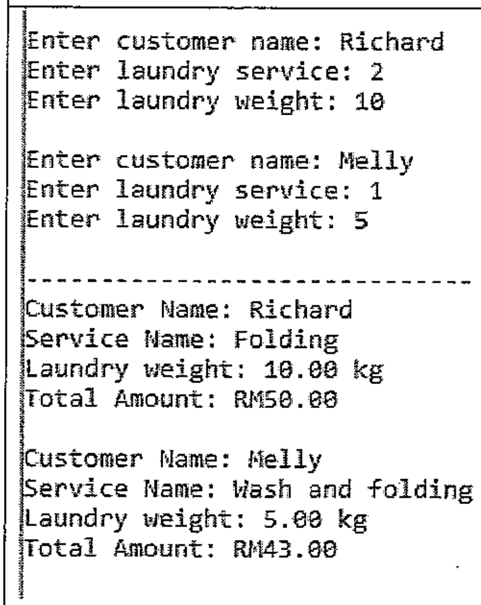
A sample content of *customer.txt* after execution

```
<customer name> <type of service> <laundry weight>

Richard 2 10.00
Melly 1 5.00
```

Figure 1: customer.txt after execution

SAMPLE OUTPUT



```
Enter customer name: Richard
Enter laundry service: 2
Enter laundry weight: 10

Enter customer name: Melly
Enter laundry service: 1
Enter laundry weight: 5

------------------------------
Customer Name: Richard
Service Name: Folding
Laundry weight: 10.00 kg
Total Amount: RM50.00

Customer Name: Melly
Service Name: Wash and folding
Laundry weight: 5.00 kg
Total Amount: RM43.00
```

Entered by user

Continued...

Program Q4

```
#include <stdio.h>
#include <string.h>

void getTotalAmount();
FILE *fWrite, *fRead;
char name[20], servicename[20];
int servicetype;
float weight, cost, amount;

void main()
{
    //(A)1m

    int x;
    for(x=0; x<2; x++)
    {
        fflush(stdin);
        printf("\nEnter customer name: ");
        gets(name);

        printf("Enter laundry service: ");
        scanf("%d", &servicetype);

        printf("Enter laundry weight: ");
        scanf("%f", &weight);

        //(B)2m
     }

    //(C)0.25m

    getTotalAmount();
}
```

Continued...

```
//continued from previous page

void getTotalAmount()
{
    //(D)1m

    printf("\n-----------------------------");

    //(E)2m
    {
        //(F)1.5m

        //(G)2m

       printf("\nCustomer Name: %s",name);
       printf("\nService Name: %s",servicename);
       printf("\nLaundry weight: %.2f kg",weight);
       printf("\nTotal Amount: RM%.2f\n",amount);
     }

     //(H)0.25m
}
```

[TOTAL 10 MARKS]

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